

ABSTRACT

A silicon containing curing composition comprising at least one silicon containing polymer selected from the following components (A), (B), and (C) and the following component (D) as a catalyst, provided that the composition contains

5 both the components (A) and (B) when the component (C) is absent:

(A) A silicon containing polymer having at least one kind of a reactive group A' selected from the group consisting of $\text{Si}-\text{R}^1$, $\text{Si}-\text{O}-\text{R}^2$, and $\text{Si}-\text{R}^3-\text{OCOC}(\text{R}^4)=\text{CH}_2$, wherein R^1 and R^2 each represent an alkenyl group having 2 to 20 carbon atoms which may contain an alkylene group and/or an arylene group; R^3 represents an alkylene group having 1 to 9 carbon atoms and/or an arylene group; and R^4 represents hydrogen or a methyl group,

10 having an Si-O-Si bridge structure at at least one site thereof, and containing 20% by weight or less of a component whose weight average molecular weight is 1000 or less.

15 (B) A silicon containing polymer having an Si-H group, having an Si-O-Si bridge structure at at least one site thereof, and containing 20% by weight or less of a component whose weight average molecular weight is 1000 or less.

(C) A silicon containing polymer having at least one kind of a reactive group A' selected from the group consisting of $\text{Si}-\text{R}^1$, $\text{Si}-\text{O}-\text{R}^2$, and $\text{Si}-\text{R}^3-\text{OCOC}(\text{R}^4)=\text{CH}_2$,

20 wherein R^1 and R^2 each represent an alkenyl group having 2 to 20 carbon atoms which may contain an alkylene group and/or an arylene group; R^3 represents an alkylene group having 1 to 9 carbon atoms and/or an arylene group; and R^4 represents hydrogen or a methyl group,

and an Si-H group, having an Si-O-Si bridge structure at at least one site thereof, and

containing 20% by weight or less of a component whose weight average molecular weight is 1000 or less.

(D) A platinum-based catalyst for curing reaction.

ABSTRACT OF THE DISCLOSURE

A curable composition which comprises at least one of the following (A), (B), and (C) and further contains the following (D) (provided that when (C) is not contained, both (A) and (B) are contained). (A): A silicon-containing polymer in which the content of components having a weight-average molecular weight of 1,000 or lower is 20 wt.% or lower and which has a reactive group A' and one or more Si-O-Si bonds. (B): A silicon-containing polymer in which the content of components having a weight-average molecular weight of 1,000 or lower is 20 wt.% or lower and which has an Si-H group and one or more Si-O-Si bonds. (C): A silicon-containing polymer in which the content of components having a weight-average molecular weight of 1,000 or lower is 20 wt.% or lower and which has a reactive group A', an Si-H group, and one or more Si-O-Si bonds. (D): A catalyst for curing reaction which is a platinum catalyst. The reactive group A' is any of Si-R¹, Si-O-R², and Si-R³-OCOC(R⁴)=CH₂, provided that R¹ and R² each is alkenyl, R³ is alkylene and/or arylene, and R⁴ is hydrogen or methyl.

Synthesis Example 11, and the mixture was subjected to copolymerization for 4 hours while stirring. The reaction was ceased by addition of ion exchange water. Pyridine hydrochloride, etc. were removed by washing with water to give silicon containing polymer precursor 10. As a result of GPC analysis, the silicon containing polymer precursor 10 was found to have an Mw of 88,000.

[0091]

SYNTHESIS EXAMPLE 13

Fifty parts of the silicon containing polymer precursor 10 obtained in Synthesis Example 12 and 5 parts of pyridine were added to a toluene solvent. The resulting mixture was divided into equal halves. To one of the halves was added 5 parts of dimethylchlorosilane, and 5 parts of dimethylvinylchlorosilane was added to the other, each followed by stirring at room temperature for 30 minutes and then at 70°C for 30 minutes and further followed by washing with ion exchanged water to remove pyridine hydrochloride thereby to give silicon containing polymer 10B and silicon containing polymer 10A, respectively. The silicon containing polymers 10A and 10B were both found to have an aryl group content of 44.0 wt% as a result of H¹-NMR and GPC analyses and to contain 0% of a component with a weight average molecular weight of 1000 or less as a result of GPC analysis.

[0092]

SYNTHESIS EXAMPLE 14

Eighty parts of dichlorodimethylsilane and twenty parts of dichlorodiphenylsilane were mixed, and the mixture was delivered by drops into 100 parts of ion exchanged water. The reaction mixture was freed from the aqueous solvent and polymerized at 250°C for 2 hours while removing the solvent by evaporation. To the resulting reaction solution were added 20 parts of pyridine and